

# **APPENDIX IV**

## **TAB AA**

# Rebuttal to Reports by Opposing Expert Witnesses

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## 1 Introduction

I have carefully read the reports by the six opposing expert witnesses. In this rebuttal, I will respond to five of the reports, omitting the one by Brian Alters. Alters's report focuses on philosophy of education, the pedagogical value of teaching intelligent design in the high school biology curriculum, and the reception of intelligent design among educators (especially among the professional educational associations concerned with science instruction). Alters's main concern is that through the teaching of intelligent design, science teachers will "engender needless misconceptions" in their students' understanding of evolutionary biology (Alters, p. 3). Other experts in these matters take exactly the opposite view. For instance, according to Larry Arnhart evolutionary theory cannot be properly understood and taught without considering ID as its foil and counterpart.<sup>1</sup> Note that Arnhart himself is not a proponent of ID.<sup>2</sup>

Although the pedagogical value of teaching ID is an interesting question, the key question is whether intelligent design constitutes a scientific program and whether the textbook in question, *Of Pandas and People* (2nd ed.), adequately represents the theory of intelligent design. Because

in particular the criticism they raise of Darwinism, remain very much alive and topics for discussion among biologists.

I want to add one final comment here. Kenneth Miller, on page 18 of his expert witness report, has a brief section titled "The Origin of Biological Information." In it he references the *Nature* article by Lenski et al. and claims that it and others like it show that evolutionary mechanisms can generate biological information. As I stress in chapter 4 of my book *No Free Lunch*, there is a big difference between evolutionary mechanisms shuffling around preexisting biological information and evolutionary mechanisms actually generating it from scratch. In that chapter I show that evolutionary mechanisms can do the former but not the latter. I argue this explicitly. Miller, on the other hand, merely asserts the opposite view without providing an argument. Moreover, the papers he cites don't address my argument either. I've since filled in the mathematical details for chapter 4 of *No Free Lunch* in a paper titled "Searching Large Spaces: Displacement and the No Free Lunch Regress," which is available on my website ([http://www.designinference.com/documents/2005.03.Searching\\_Large\\_Spaces.pdf](http://www.designinference.com/documents/2005.03.Searching_Large_Spaces.pdf)) and slated to be published in a special issue on these questions in an IEEE biocomputing journal.

### 3.3 ID's Big Tent

CLAIM: On page 8 of his expert witness report, Pennock notes that some young earth creationists consider themselves as part of the ID movement. Pennock then adds that because such people are in the ID movement, "allowing ID into the schools thus allows all these views perforce."

COMMENT: ID is indeed a big tent, and many people of different views and backgrounds have associated themselves with it. But it hardly follows that the idiosyncratic views of some of ID's followers will therefore be mainstreamed and allowed into the schools. Young earth creationism has been roundly defeated in the courts. In particular, the U.S. Supreme Court in *Edwards v. Aguillard* has barred it from the high school science curriculum. There is thus no justification for thinking that ID can be parlayed into a young earth creationism in the schools. Pennock is here engaging in a bit of fear-mongering. I expect ID's acceptance into the high school biology curriculum will proceed conservatively, preserving as much of "the settled findings of science" (as Pennock puts it on p. 8 of his report) as possible and coming into conflict with evolution mainly on the question of evolutionary mechanisms.

### 3.4 ID Proponents Recognize that ID Is Not Science

CLAIM: On pages 12 and 13 of his report, Pennock purports to show that ID proponents acknowledge that ID is not science.

COMMENT: Given methodological materialism as a regulative principle for science, ID is by definition excluded from science. ID proponents regard methodological materialism as an arbitrary rule imposed on science and therefore propose to get rid of it (see the section on methodological materialism in my rebuttal to Forrest). In so doing, they are changing the ground

rules of science. But this is nothing new. In the history of science, the ground rules of science have changed at several key junctures in the past (notably, the change from an Aristotelian conception of science to a mechanistic conception of science in the 17th century). ID proponents most emphatically claim to be doing science. At the same time, we refuse to do science under arbitrary strictures that privilege a materialistic ideology (methodological materialism) which cannot itself be empirically tested or assessed scientifically. (There is no experiment that can test methodological materialism.)

### 3.5 No Positive Evidence for Design

**CLAIM:** A running theme in Pennock's expert witness report, and which gets special attention on pages 16 to 19 of it, is that ID does not present positive evidence for design in nature but instead argues negatively against the adequacy of material causes.

**COMMENT:** Invoking the words "positive" and (implicitly) "negative" the way Pennock does plays on the connotations of these words but doesn't address the substance of ID's claims or for that matter ID's research potential. Consider the first and second laws of thermodynamics (and please note, I am not invoking these to justify ID or undercut evolution — I'm simply appealing to them by analogy). The first law says that in an isolated system energy remains constant (conservation of energy). The second law says that in an isolated system entropy is statistically bound to increase.

Both of these laws are what may be called "proscriptive generalizations." In other words, they preclude certain things from happening. Thus, the first law of thermodynamics precludes energy in an isolated system from fluctuating and the second law of thermodynamics precludes entropy from decreasing. By parity of reasoning, Pennock might therefore argue that those who propose these laws are not demonstrating anything positive about energy and entropy. But in fact, these proscriptive generalizations have been enormously useful and fruitful in the sciences. So too, for ID to gauge the unevolvability of biological systems and to establish the need for intelligence to bring about such systems may well turn out to be a catalyst of scientific research whose significance might even end up being comparable to that of the laws of thermodynamics. Time will tell.

### 3.6 No Way to Assess Probabilities

**CLAIM:** Pennock claims that complex specified information as I develop it is scientifically intractable. As Pennock puts it, "there is no way to assess the probability in any real biological case." (Pennock, p.19)

**COMMENT:** Pennock is in no position to make this claim. Probabilities can be assigned any number of ways. They can be empirical probabilities (probabilities based on past frequencies). The probability of coins landing in certain ways can also be assessed on the basis of the geometry of the coin. Additionally, probabilities can be assessed on the basis of the laws of physics and chemistry that govern the system (cf. quantum systems with certain probabilities